DEPARTMENT OF THE NAVY
OFFICE OF NAVAL RESEARCH
SEATTLE REGIONAL OFFICE
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IN REPLY REFER TO:

4330
ONR 247
11 Jul 97

From: Director, Office of Naval Research, Seattle Regional Office, 1107 NE 45th St., Suite 350, Seattle, WA 98105
To: Defense Technical Center, Attn: P. Mawby, 8725 John J. Kingman Rd., Suite 0944, Ft. Belvoir, VA 22060-6218

Subj: RETURNED GRANTEE/CONTRACTOR TECHNICAL REPORTS

1. This confirms our conversations of 27 Feb 97 and 11 Jul 97. Enclosed are a number of technical reports which were returned to our agency for lack of clear distribution availability statement. This confirms that all reports are unclassified and are "APPROVED FOR PUBLIC RELEASE" with no restrictions.

2. Please contact me if you require additional information. My e-mail is *silverr@onr.navy.mil* and my phone is (206) 625-3196.

ROBERT J. SILVERMAN

To: Regional Director
Team Leader
ACO

This technical report was sent to me by DTIC because it does not include the DD-1498 form with the proper disclosure/distribution statement.

Please obtain this form with proper instructions and return it and the technical report directly to DTIC.

Also implement procedures with the contractor to correct this problem.

Thank You,

Jim Carbonara,
Director, Field Operations

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	12/15/95	Semi-Annual 6/30/95 - 12/30/95

4. TITLE AND SUBTITLE

The Mauthner System Model for Directional Hearing in Fish

5. FUNDING NUMBERS

N00014-94-1-0380

6. AUTHOR(S)

Robert C. Eaton, Ph.D

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

University of Colorado at Boulder
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8. PERFORMING ORGANIZATION REPORT NUMBER

153-5712

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

NONE

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

See Attached

14. SUBJECT TERMS			15. NUMBER OF PAGES
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT

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The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to ***stay within the lines*** to meet ***optical scanning requirements***.

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MEMORANDUM

To: Dr. Harold Hawkins (phone: 703-696-4323)
ONR, Code 3421 (1142 CN)
800 N. Quincy Street
Arlington, VA 22717

RE: ONR Award N00014-94-19-0380

Subject: Progress report

PI: Robert C. Eaton, Ph.D.

Address: Center for Neuroscience & Department of Biology
EPO Box 334, University of Colorado at Boulder, CO 80309, PHONE: 303-492-6536
BITNET:MAUTHNER@SPOT.COLORADO.EDU FAX: 303-492-8699

Title: The Mauthner System Model for Directional Hearing in Fish

Description: This is a study of the problem of sound localization in fish involving an analysis of the neural mechanisms of sound avoidance responses triggered by the Mauthner system.

Progress: The following progress has been made in achieving the goals of this project.

This is an analysis of the neural mechanisms of sound avoidance responses triggered by the Mauthner system in fish. The following progress has been made. 1) Behavioral experiments show that goldfish turn away from sound sources predicted by our XNOR version of the phase model: the fish avoids P+/A+ and P-/A- (for impulse sounds in the near field, where P+ = positive pressure, A+ = particle acceleration toward the side of the activated Mauthner cell). 2) The Mauthner cell is broadly tuned to P+ and P- in the range of 0.1-2KHz, and equally is sensitive to A+ and A- at 0.1 KHz at about 0.1 m/sec^2. We have as yet seen no preferential Mauthner responsiveness to *combinations* of P and A; that is P+/A+, an ON combination, is not faster or larger than P+/A-, an OFF combination. If so, then the PHP cells must be performing a major part of the neural analysis. 3) The most recent version of our neurocomputational model predicts known Mauthner network dynamics when the PHP cells serve as OR gates; as previously shown, the PHP cells modulate Mauthner threshold to particular stimulus amplitudes and our model shows they can simultaneously allow Mauthner to discriminate left from right sound sources.

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